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U.S. Department of the Interior • U.S. Geological Survey

# MINERAL INDUSTRY SURVEYS

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## PRECIOUS METALS IN JUNE 1997

U.S. mines produced 27,700 kilograms of gold and 130,000 kilograms of silver in June 1997. Gold production in Nevada, the largest producer, increased about 3% from the previous month. Production of silver was up by about 30% in Nevada and 8% in Arizona while California reported an 11% decrease. Total silver production in June was up by about 6%.

### Gold

**Domestic.**—Metals Economics Group estimates that ten mines scheduled for start-up in the second half of 1997 will contribute 161,000 troy ounces of gold to 1997 production and add 0.6 million ounces of annual gold capacity. In addition, a number of existing operations are expanding their capacity (Mining Journal, 1997b).

**International.**—According to one specialist, unhedged gold producers in South Africa and Australia are probably losing money at current gold prices, and as much as 57% of western gold is being produced at a loss. Another analyst reports that raising finance for new mines could be a problem but doubts that there will be significant closures in the near term because forward sales contracts are still at a reasonable price (Mining Journal, 1997a).

**Update.**—The Central Bank of Russia (CBR) reportedly has bought 5.25 metric tons of gold over the first 6 months of 1997. Reportedly, the CBR now holds reserves of more than 400 tons of gold, and is trying to restore reserves, which shrank considerably after the collapse of the USSR. Over the next 2 years Russia reportedly plans to increase its gold reserves to more than 2,000 tons (Platt's Metals Week, 1997a).

South African gold mines suffered the worst quarter in their history with at least 15 mines, or 40% of their gold mining industry, producing at a loss. Another five mines are close to producing at a loss. During the second quarter of 1997, about 26.7 tons of gold was mined at less than break even costs, and another 20 tons was brought to the surface without making a

profit (African Mining Bulletin, 1997a).

First gold has been poured at Reunion Mining's Dunrobin gold mine situated 120 kilometers west of Lusaka in central Zambia. Production is expected to approach 1,600 ounces of gold per month by the end of 1997 (African Mining Bulletin, 1997b).

### Silver

**Low-Resistance Contacts in Semiconductors Made from Silver.**—Silver/zinc contacts on p-doped semiconductor electronic devices have been found to exhibit electrical resistivities as low as  $10^{-4} \Omega \cdot \text{cm}^2$ . The contacts are formed by deposition of a combination of Ag and Zn on InP surfaces, then sintering. Unlike the fabrication of contacts from other materials, the sintering step in the fabrication of Ag/Zn contacts does not cause so much interdiffusion of metal and semiconductor material as to degrade or destroy the underlying devices (NASA Tech Briefs, 1997).

**New Silver Mineralization Discovered.**—Canadian International Larder Minerals and Prospectors Alliance have identified new base and precious metals mineralization at the Alder Pond property in Maine. Latest drill results reportedly indicate particularly high values for zinc (10.78%) in addition to 1.07% Cu, 0.76% Pb, and 59.3 g/t Ag. While the ore zone delineated to date remains relatively small, grades encountered so far are rich. The new mineralized zone was intersected less than 80 meters northwest of the main ore zone, where values as high as 142 g/t Ag were recorded, albeit from a narrow drill core width. The main zone is estimated at only about 429,000 t, with a metal grade of 18.5% Zn, 3.5% Cu, and 1% Pb (Mine Development Business Leads, 1997).

### Platinum-Group Metals

Washington, D.C., June 11, 1997—In a mark-up session on the Fiscal Year 1998 Defense Authorization Bill, The U.S.

House of Representatives made provision for the transfer of stockpile platinum from the Defense Logistics Agency (DLA) to the U.S. Treasury to start its platinum coin program. DLA may transfer no more than 200,000 ounces to the treasury at any one time, with 81,600 ounces being of the highest quality. Treasury will bear all cost for the transfer. If the occasion should arise, Treasury is required to replace the platinum upon one year's notice.

**Stillwater Mining to Double Palladium Capacity.**—The first phase of a three-stage expansion program at the Stillwater mine in Montana is near completion and will be completed on schedule by the end of 1997. This will double daily ore throughput to 1,800 tons per day, thereby increasing the annual production of platinum-group metals (PGM) from 255,000 ounces in 1996 to 350,000 ounces in 1997. The \$69 million expansion involves the expansion of the existing smelter and the construction and startup of a base metals refinery. The second-phase expansion to increase daily ore throughput from 1,800 tons per day to 3,200 tons per day will begin in 1998. Eventually ore throughput will increase to about 3,600 tons per day. In round numbers, each 900 tons per day output produces about 250,000 ounces per year of PGM. Once the smelter and refinery are completed, Stillwater will also have the capacity to process secondary materials containing PGM, such as auto catalysts. In addition to the expansion at the mining complex at Nye, Montana, development work is in progress for a second mine on the orebody, which is about 28 miles long. The new mine, called the East Boulder Project, has been fully permitted and is awaiting approval by the board of directors. The Nye mine has proven PGM reserves of 12.5 million ounces, and East Boulder reportedly has 9.1 million ounces, for a total of 21.6 million ounces (Platt's Metals Week, 1997b).

**Update: U.S. Department of Commerce Requests Public Comment on Proposed sale of Stockpile Materials.**—Washington, D.C., August 27, 1997—The National Defense Stockpile Market Impact Committee, co-chaired by the Departments of Commerce and State, on this day published a *Federal Register* Notice (62 FR 45393, August 27, 1997) seeking public comment on the market impact of the Department of Defense's (DOD) proposed sale of excess materials from the National Defense Stockpile. The Committee is considering DOD's proposed new material disposals as well as revisions to current material disposals under the FY 1998 Annual Materials Plan (AMP), which must be approved by Congress. Public comments on the potential market impact of the proposed sales must be received by September 26, 1997 for the Committee to consider them.

Included in the AMP listing of materials is the proposed

maximum disposal quantity for each material that can be sold during a particular year. The revised proposed sale of palladium and platinum in FY 1998 is 300,000 and 125,000 ounces respectively. The quantity of each material that will actually be offered for sale will depend on the market for the material at the time as well as the quantity of material approved by Congress for disposal.

To obtain a copy of, or more information about, the *Federal Register* Notice, please contact either of the Committee co-chairs, Richard V. Meyers, Office of Strategic Industries and Economic Security, U.S. Department of Commerce, Telephone (202) 482-3634 or FAX (202) 482-5650; or Richard Watkins, International Commodities Division, U.S. Department of State, Telephone (202) 647-2871 or FAX (202) 647-8758.

## References Cited

- African Mining Bulletin, 1997a, South Africa: African Mining Bulletin, no. 31, August 14. (Accessed August 15, 1997 on the World Wide Web at URL <http://www.alan@mejhb.pwv.gov.za>)
- 1997b, Zambia: African Mining Bulletin, no. 32, August 21. (Accessed August 22, 1997 on the World Wide Web at <http://www.alan@mejhb.pwv.gov.za>)
- Mine Development Business Leads, 1997, Polymetallic deposit found in Maine: Mine Development Business Leads, no. 3, June, p. 6.
- Mining Journal, 1997a, Gold stays on the canvas: Mining Journal, v. 329, no. 8438, July 18, p. 52.
- 1997b, U.S. Gold production: Mining Journal, v. 329, No. 8437, July 11, p. 52.
- NASA Tech Briefs, 1997, Ag/Zn contacts on shallow-junction p-doped InP devices: NASA Tech Briefs, v. 21, no. 6, June, p. 45.
- Platt's Metals Week, 1997a, Russia's Central Bank has 400 mt of gold: Platt's Metals Week, v. 68, no. 31, August 4, p. 16.
- 1997b, Stillwater to double palladium capacity this year: Platt's Metals Week, v. 68, no. 25, June 23, p.12-13.

## Publications on the Internet

Monthly, quarterly, and annual Minerals Information publications are now available through the World Wide Web (www). These publications include Mineral Commodity Summaries, Minerals Yearbook, Mineral Industry Surveys, and Metal Industry Indicators. To access Minerals Information publications, visit the Minerals Information home page at <http://minerals.er.usgs.gov/minerals>.

TABLE 1  
MINE PRODUCTION OF RECOVERABLE GOLD AND SILVER IN THE UNITED STATES, BY STATE 1/

(Kilograms)

	Arizona	California	Montana	Nevada	Other States 2/	Total
<b>Gold:</b>						
1996: p/						
June	117	2,210	703	17,500	4,960	25,500
July	119	2,080	987	19,000	4,990	27,200
August	158	1,880	1,010	19,300	5,250	27,600
September	232	1,920	968	18,500	5,600	27,200
October	223	1,920	1,140	19,100	5,330	27,800
November	125	1,860	929	18,000	4,810	25,700
December	124	1,980	876	19,800	5,210	28,000
Jan.-Dec.	2,070	24,500	10,800	215,000	60,900	313,000
1997:						
January	W	1,840	733	18,200	5,270	26,100
February	W	1,840	754	16,100	5,110	23,800
March	W	1,890	767	20,000	4,990	27,700
April	W	1,890	714	18,500	5,400	26,500
May	102	1,870	735	19,400 r/	5,640 r/	27,700 r/
June	79	1,810	685	20,100	5,090	27,700
Jan.-June	181	11,100	4,390	112,000	31,500	160,000
	Arizona	California	Idaho	Nevada	Other States 3/	Total
<b>Silver:</b>						
1996: p/						
June	12,100	1,570	16,300	57,700	39,800	127,000
July	13,700	1,990	18,300	55,300	38,400	128,000
August	13,600	1,470	18,600	53,900	45,800	133,000
September	13,000	1,330	18,000	57,200	37,500	127,000
October	12,500	1,450	18,600	67,700	35,800	136,000
November	13,900	1,340	17,700	48,900	32,200	114,000
December	14,100	1,250	17,800	58,300	34,800	126,000
Jan.-Dec.	167,000	22,400	199,000	617,000	435,000	1,440,000
1997:						
January	11,200	1,120	18,200	64,600	35,200	130,000
February	10,300	1,090	17,400	46,200	36,400	111,000
March	14,700	1,370	18,000	61,700	30,000	126,000
April	12,600 r/	1,670	18,100	58,100	36,900	127,000
May	13,500 r/	1,440	18,100	47,000	42,700	123,000 r/
June	14,600	1,280	18,100	60,900	35,600	130,000
Jan.-June	77,000	7,990	108,000	339,000	217,000	748,000

p/ Preliminary. r/ Revised. W Withheld to avoid disclosing company proprietary data; included with "Other States."

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Includes Alaska, Colorado, Idaho, New Mexico, South Carolina, South Dakota, Utah, Wisconsin, and State indicated by symbol "W."

3/ Includes Alaska, Colorado, Michigan, Missouri, Montana, New Mexico, New York, South Carolina, South Dakota, Utah, Wisconsin, and State indicated by symbol "W."

TABLE 2  
SELECTED PRECIOUS METAL PRICES

(Dollars per troy ounce)

	Gold	Silver	Platinum	Palladium
<b>Engelhard Industries:</b>				
1996:				
Year:				
Low/date	368.67 (Dec. 03)	4.67 (Dec. 03)	368.00 (Dec. 16)	117.00
High/date	391.06 (Aug .05)	5.82 (Feb. 02)	433.00 (Feb. 05)	146.00
Average	389.08	5.20	397.97	130.39
1997:				
May				
Low/date	340.48/01	4.67/22	372.00/01	158.00
High/date	350.34/14	4.90/12	415.10/29	200.00
Average	345.00	4.76	390.14	173.38
June:				
Low/date	335.77/30	4.65/30	403.00/02	177.00
High/date	345.49/09	4.82/06	490.00/09	245.00
Average	341.98	4.74	432.52	209.47
July:				
Low/date	318.49/09	4.22/17	405.00/15	178.00
High/date	334.92/01	4.65/02	436.00/01	219.00
Average	324.88	4.35	415.52	195.61
Year to date:				
Low/date	318.49 (July 09)	4.22 (July 08)	403.00 (June 02)	177.00
High/date	367.82 (Jan. 01)	5.30 (Mar. 14)	490.00 (June 06 & 09)	245.00
Average	344.97	4.81	388.09	164.77
<b>Handy and Harman:</b>				
1996:				
Average	387.81	5.18	XX	XX
1997:				
May	343.75	4.75	XX	XX
June	340.75	4.74	XX	XX
July	324.08	4.35	XX	XX
Year to date	343.79	4.81	XX	XX
<b>London Final:</b>				
1996:				
Average	387.70	5.20	XX	XX
1997:				
May	343.84	4.75	XX	XX
June	340.75	4.75	XX	XX
July	324.10	4.36	XX	XX
Year to date	343.90	4.81	XX	XX

XX Not applicable.

Source: Platt's Metals Week.

TABLE 3  
U.S. IMPORTS AND EXPORTS OF GOLD, BY COUNTRY 1/

(Kilograms of gold content, unless otherwise specified)

Country	Ores and concentrates 2/	Dore and precipitates	Refined bullion 3/	Total	Waste and scrap 4/ (gross weight)
<b>Imports for consumption:</b>					
1996:					
Year	3,460	11,900	143,000	159,000	13,000
1997:					
March	121	1,630	27,000	28,700	914
April	167	877	19,900	20,900	917
May					
Brazil	--	--	3,310	3,310	--
Canada	--	70	9,390	9,460	121
Chile	--	705	563	1,270	(5/)
Colombia	--	--	473	473	--
Dominican Republic	--	--	64	64	239
Mexico	38	650	182	870	166
Netherlands Antilles	--	--	355	355	--
Peru	--	--	733	733	4
Switzerland	--	--	697	697	--
Uruguay	--	--	1,290	1,290	--
Other	--	455	86	541	553
Total	38	1,880	17,100	19,100	1,080
Year to date	878	6,990	89,100	97,000	4,600
<b>Exports:</b>					
1996:					
Year	374	65,100	406,000	471,000	89,900
1997:					
March	74	6,180	82,700	88,900	5,510
April	8	5,790	71,300	77,100	4,870
May					
Canada	--	941	712	1,650	2,630
France	--	--	--	--	972
Germany	--	--	517	517	128
Hong Kong	--	--	1,510	1,510	--
Korea, Republic of	--	--	613	613	--
Mexico	--	--	891	891	--
Switzerland	--	3,290	36,200	39,500	--
Taiwan	--	--	1,000	1,000	--
United Kingdom	--	1,320	4,890	6,210	962
Other	--	--	842	842	434
Total	--	5,550	47,200	52,700	5,130
Year to date	183	26,300	234,000	260,000	24,200

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Includes gold content of base metal ores, concentrates, and matte imported for refining.

3/ Bullion also moves in both directions between U.S. markets and foreign stocks on deposit in the Federal Reserve Bank. Monetary gold excluded.

4/ "Waste and scrap" not included in "Total."

5/ Less than 1/2 unit.

Source: Bureau of the Census.

TABLE 4  
U.S. IMPORTS AND EXPORTS OF SILVER, BY COUNTRY 1/

(Kilograms of silver content, unless otherwise specified)

Country	Ores and concentrates 2/	Dore and precipitates	Refined bullion	Total	Waste and scrap 3/ (gross weight)
<b>Imports for consumption:</b>					
1996:					
Year	153,000	281,000	2,580,000	3,010,000	1,810,000
1997:					
March	8,220	25,200	163,000	196,000	134,000
April	17,300	28,200	197,000	242,000	87,800
May:					
Canada	--	28,400	50,800	79,200	37,900
Chile	--	12,800	--	12,800	99
Dominican Republic	--	--	--	--	935
Germany	--	--	--	--	39,800
Malaysia	--	--	--	--	29,500
Mexico	8,210	705	51,300	60,200	1,490
Netherlands	--	--	--	--	19,900
Peru	--	--	16,600	16,600	--
Philippines	--	--	--	--	26,300
South Africa	--	1,080	--	1,080	--
United Kingdom	--	--	--	--	19,300
Other	--	623	80	703	273
Total	8,210	43,600	119,000	171,000	176,000
Year to date	48,700	157,000	825,000	1,030,000	613,000
<b>Exports:</b>					
1996:					
Year	1,520 r/	43,300	2,900,000 4/	2,950,000	1,280,000
1997:					
March	--	9,510	80 5/	9,590	92,300
April	4,110	7,830	40,500	52,500	59,800
May:					
Belgium	--	--	--	--	6,000
Canada	--	--	--	--	49,500
China	--	--	--	--	5,300
France	--	--	--	--	417
Germany	--	--	--	--	3,530
India	--	--	21,400	21,400	--
Japan	--	254	18,700	18,900	12,400
Sweden	--	--	--	--	2,580
Switzerland	--	297	--	297	--
Taiwan	--	5,080	--	5,080	--
United Arab Emirates	--	--	18,100	18,100	--
United Kingdom	--	644	239,000	239,000	12,500
Uruguay	--	--	2,000	2,000	--
Other	--	--	153	153	1,690
Total	--	6,280	299,000	305,000	94,000
Year to date	15,800	38,300	434,000	488,000	404,000

r/ Revised.

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Includes silver content of base metal ores, concentrates, and matte imported for refining.

3/ "Waste and scrap" not included in "Total."

4/ Verification of Bureau of the Census exports was not possible for some months of 1996.

5/ All or part of these data have been referred to the Bureau of the Census for verification.

Source: Bureau of the Census.

TABLE 5  
U.S. IMPORTS AND EXPORTS OF PLATINUM-GROUP METALS, BY COUNTRY 1/

(Kilograms of metal content, unless otherwise specified)

Country	Ores and concentrates	Waste and scrap (gross weight)	Refined					
			Platinum	Palladium	Rhodium	Iridium	Osmium	Ruthenium
Imports for consumption:								
1996:								
Year	1,960	5,060	73,700 1/	146,000	9,650	1,810	329	15,600
1997:								
March	--	326	4,660	6,560	447	36	--	1,000
April	--	5,390	78,400	152,000	10,100	1,850	--	16,600
May:								
Belgium	--	--	173	1,490	1	--	--	2
Canada	--	40	290	306	--	--	--	--
China	--	--	--	209	--	--	--	--
Germany	--	18	405	566	24	--	--	39
Japan	--	--	--	501	--	--	--	--
Mexico	--	1	4	--	--	--	--	--
Norway	--	--	84	144	--	--	--	--
Russia	--	--	23	543	--	--	--	--
South Africa	--	--	4,490	1,420	177	27	--	708
Switzerland	--	--	534	181	--	6	--	88
United Kingdom	--	517	810	1,650	9	10	--	23
Other	--	19	54	40	--	--	--	--
Total	--	595	6,870	7,050	211	43	--	860
Year to date	--	2,020	32,000	39,600	2,910	624	18	5,780
Exports:								
1996:								
Year	484	8,640	12,700	26,700	196	123 3/		
1997:								
March	60	1,120	1,950	3,970	5	9 3/		
April	116	752	2,700	3,720	9	11 3/		
May:								
Belgium	--	15	492	454	--	--		
Canada	--	31	6	75	--	1 3/		
France	--	--	103	41	--	--		
Germany	--	536	44	130	--	1 3/		
Hong Kong	--	--	--	1	--	32 3/		
Ireland	--	--	402	111	1	--		
Italy	--	10	2	918	--	--		
Japan	7	116	61	858	1	52 3/		
Korea, Republic of	1	--	71	156	--	--		
Mexico	--	--	5	415	--	--		
Netherlands	--	--	7	136	--	--		
South Africa	1	--	--	--	--	--		
Switzerland	12	--	3	978	--	--		
Taiwan	--	--	4	482	--	--		
United Kingdom	--	584	30	156	--	269 3/		
Other	--	4	30	53	--	--		
Total	21	1,300	1,260	4,960	2	355 3/		
Year to date	376	4,710	7,360	18,300	24	407 3/		

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Of this amount, 2,070 kilograms was in the form of platinum coins.

3/ Includes osmium and ruthenium.

Source: Bureau of the Census.